

CLAIMS

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1. A field emission cathode comprising conjugated polymer material forming a field emission surface.
2. A field emission cathode as claimed in claim 1 wherein the polymer material is a substituted polythiophene.
3. A field emission cathode as claimed in any preceding claim wherein the polymer material comprises a polyalkylthiophene.
4. A field emission cathode as claimed in any preceding claim wherein the polymer material comprises poly-3-octylthiophene.
5. A field emission cathode as claimed in any preceding claim wherein the polymer material is formed as a layer on a substrate.
6. A field emission cathode as claimed in claim 5, wherein the polymer material layer is formed from a polymer solution which is distributed on the substrate, the solvent being evaporated during manufacture to leave behind the polymer layer.
7. A field emission cathode as claimed in claim 6, wherein the solvent is evaporated under vacuum.
8. A field emission cathode as claimed in claim 6 or claim 7, wherein the surface of the polymer layer comprises voids which are formed by solvent evaporation.
9. A field emission cathode as claimed in any of claims 1 to 7, wherein the surface of the polymer material is shaped by use of a mould.

10. A field emission cathode as claimed in claim 9 wherein the moulded shape of the polymer material surface comprises projections which promote field emission.

11. A field emission cathode as claimed in any preceding claim, wherein the polymer material is doped with an electron donor material.

12. A field emission display comprising a field emission cathode as claimed in any preceding claim.

13. A field emission display device as claimed in claim 12, comprising a first anode separated from the cathode such as to be capable of causing field emission therefrom, a second anode positioned beyond the first anode and a luminescent screen, wherein electrons are selectively emitted from the cathode under the influence of the first anode then accelerated onto the screen with sufficient energy to cause it to luminesce by the second anode.

14. A method of fabricating a field emission cathode comprising forming a layer comprising conjugated polymer material on a substrate, the polymer material forming a field emission surface of the cathode.

15. A method as claimed in claim 14, wherein a polymer solution is distributed on the substrate and the solvent is evaporated to leave behind the polymer layer.

16. A method as claimed in claim 15, wherein the solvent is evaporated under vacuum.

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17. A method as claimed in claim 15 or claim 16, comprising the further step of shaping the surface of the polymer material by use of a mould.